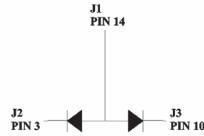
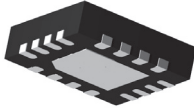
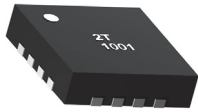


MSW2T-1001

PIN DIODE SWITCH ELEMENT



Plastic Molded 16L 3x3 QFN
(Package paddle electrical & thermal ground)

Description

A SPDT switch in a plastic 16L 3x3 QFN package. Each port is Electrical Series and Thermal direct to Ground. This device is designed for wireless infrastructure, test instruments and other RF & microwave applications from 100 MHz to 6 GHz.

Features

- Supports up to 20 watts power
- Low insertion loss typical 0.3 dB up to 6 GHz
- High Isolation typical 24 dB typical at 6 GHz

Maximum Ratings

RATING	LIMITS	UNITS
V_R	125	V
I_{FDC}	200	mA
θ_{JC}	130	°C/W
T_J	+175	°C
T_{STG}	-65 to +150	°C
T_{MTG}	+260 °C per JEDEC STD-J-20C	

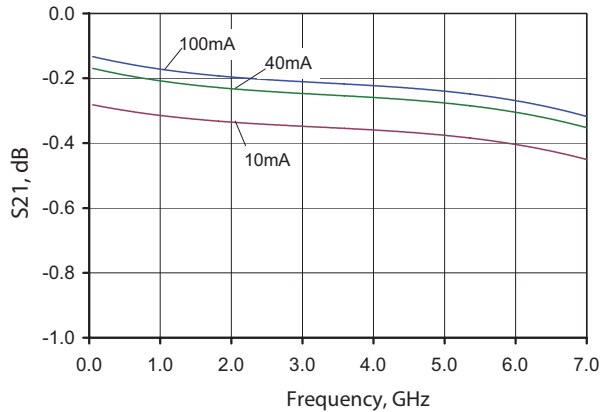
Electrical Characteristics, $T_c = +25\text{ °C}$

SYMBOL	TEST CONDITIONS			MINIMUM	TYPICAL	MAXIMUM	UNITS
V_{BR}	$I_R = 10\ \mu\text{A}$			125	–	–	V
τ	$I_F = 10\ \text{mA}$	$I_R = 6\ \text{mA}$	Measured at 50%	–	90	–	ns
R_S	$I_F = 100\ \text{mA}$		500 MHz	–	1.7	–	ohms
C_T	$V_R = -20\ \text{V}$		1 MHz	–	0.05	–	pF
W	I-Layer			–	8	–	μm
IP3	$I_F = 50\ \text{mA}$ F1 = 1.27 GHz F2 = 1.28 GHz P = 40 dBm			–	68	–	dBm
I_L	$I_F = 100\ \text{mA}$ J1-J2, J1-J3	F = 2.3 - 2.7 GHz		–	0.2	0.3	dB
		F < 6.0 GHz		–	0.3	–	dB
IRL	$I_F = 100\ \text{mA}$ J1-J2, J1-J3	F = 2.3 - 2.7 GHz		21	25	–	dB
		F < 6.0 GHz		15	18	–	dB
ORL	$I_F = 100\ \text{mA}$ J1-J2, J1-J3	F = 2.3 - 2.7 GHz		21	25	–	dB
		F < 6.0 GHz		15	18	–	dB
I_s	$V_R = -10\ \text{Volts}$ J1-J2, J1-J3	F = 2.3 - 2.7 GHz		26	30	–	dB
		F < 6.0 GHz		19	23	–	dB

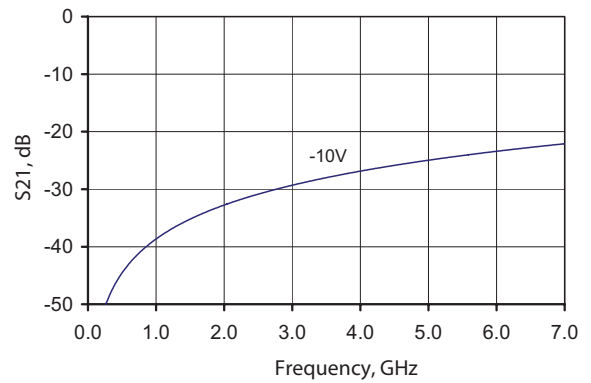


J1-J2 Typical RF Performance at $T_A = 25\text{ }^\circ\text{C}$, $Z_o = 50\ \Omega$, -10 dBm Small Signal

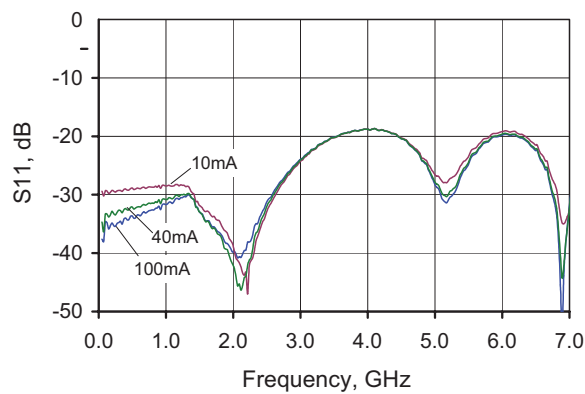
Insertion Loss



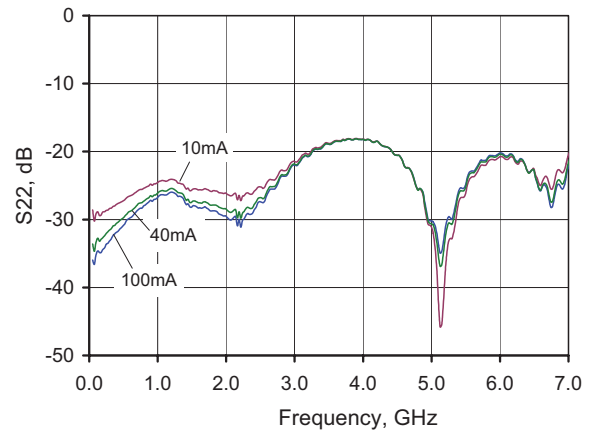
Isolation



Input Return Loss

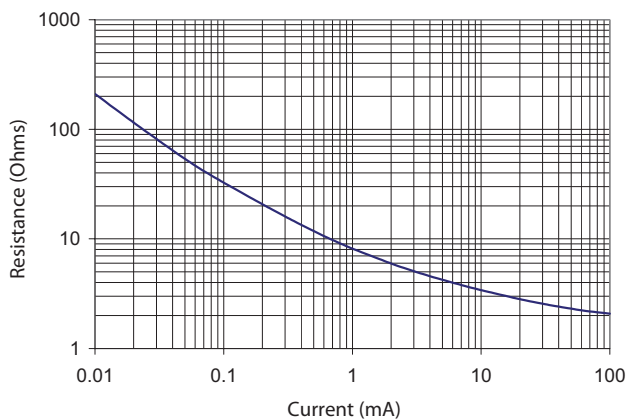


Output Return Loss



J1-J2 and J1-J3

Resistance vs Bias 500 MHz

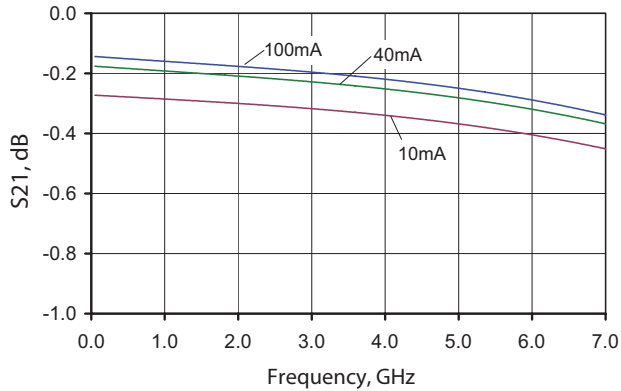


MSW2T-1001

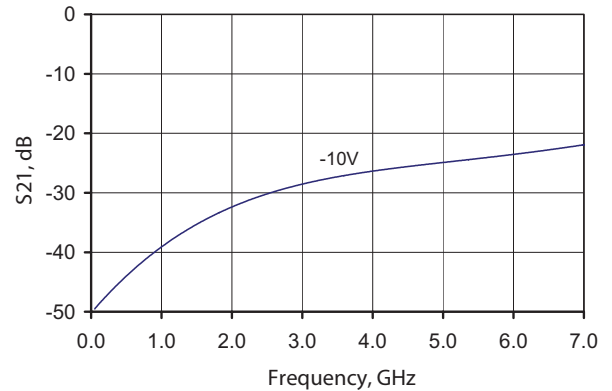


J1-J3 Typical RF Performance at $T_A = 25^\circ\text{C}$, $Z_o = 50\ \Omega$, -10 dBm Small Signal

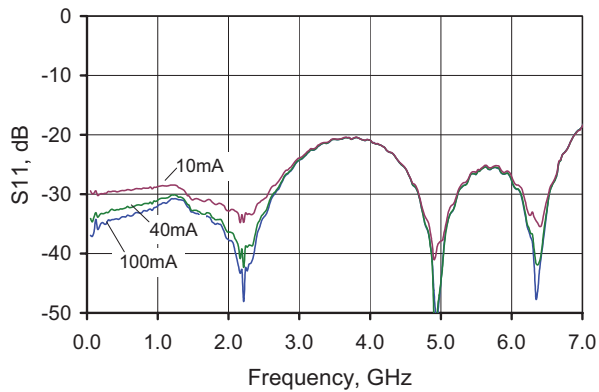
Insertion Loss



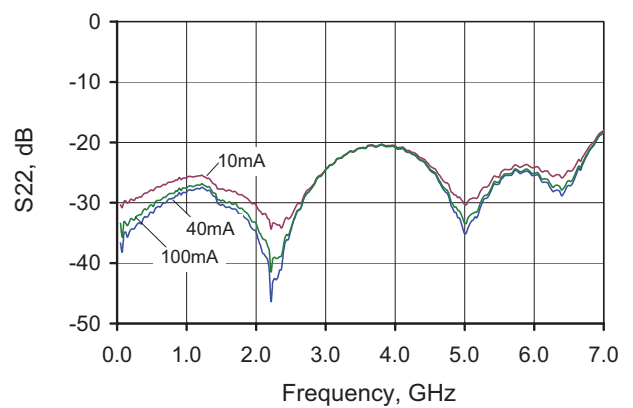
Isolation



Input Return Loss

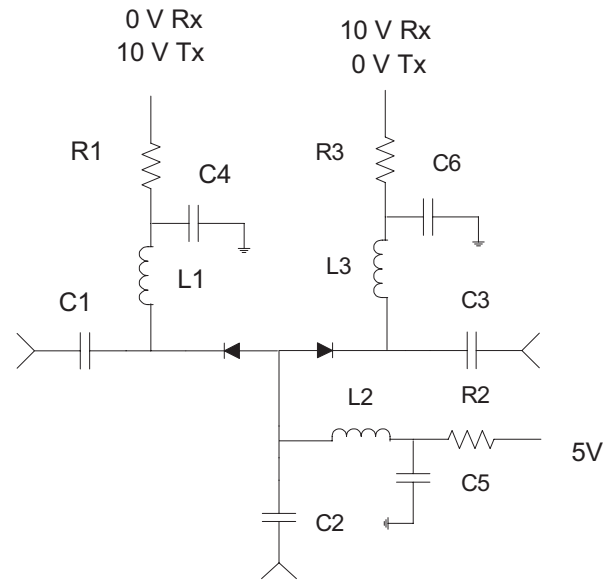
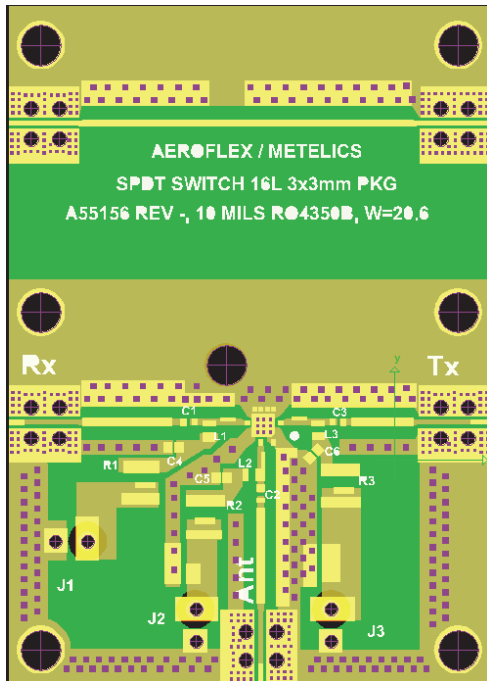


Output Return Loss



Typical RF Performance on Demo Board at $T_A = 25\text{ }^\circ\text{C}$, $Z_0 = 50\text{ }\Omega$, -10 dBm Small Signal

Demo Board Outline, Dimensions and Schematic



Dimensions: 1.50 in (3.81 cm) X 2.10 in (5.33 cm)

Parts Lists

Item	Value	Description	MFG	Part Number
R1, R3	0 Ohm	Chip Short Resistor		
R2	39 Ohm	Chip Resistor, 0.5 W, 5%		
C1, C2, C3	30 pF	Chip DC BLK Capacitor, 0402 PLG, 20%	DiLabs	P42BL300M5S
C4, C5, C6	47 pF	Chip Capacitor, 0603 PKG, 20%	ATC	600S470MT250XT
L1, L2, L3	27 nH	Chip Inductor, 0402 PKG, 5%	CoilCraft	0402CS-27NX_LU
PCB	na	Demo Board, 10 mils Rogers RO4350B	Metelics	A55156 rev -

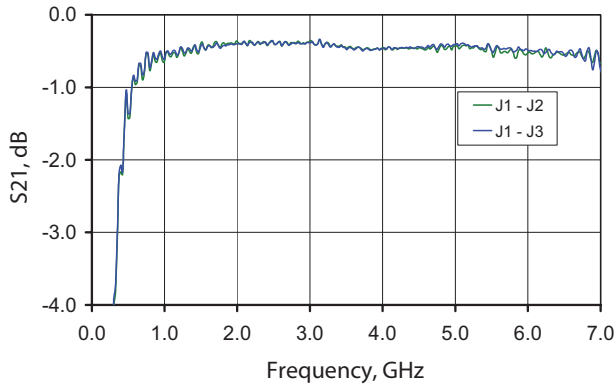
MSW2T-1001



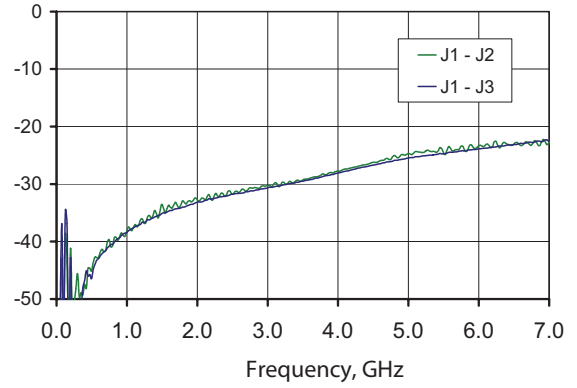
Typical RF Performance on Demo Board

$T_A = 25\text{ }^\circ\text{C}$, $Z_o = 50\ \Omega$, -10 dBm Small Signal, 100 mA Bias

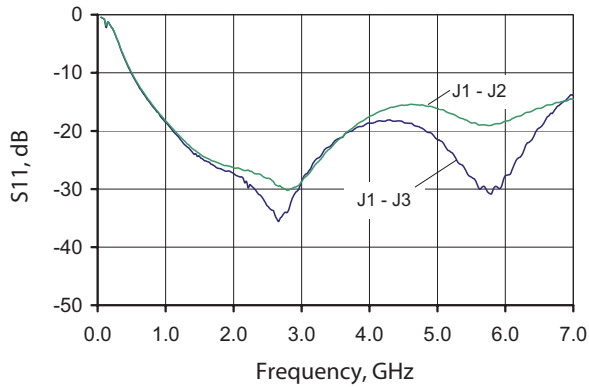
Insertion Loss



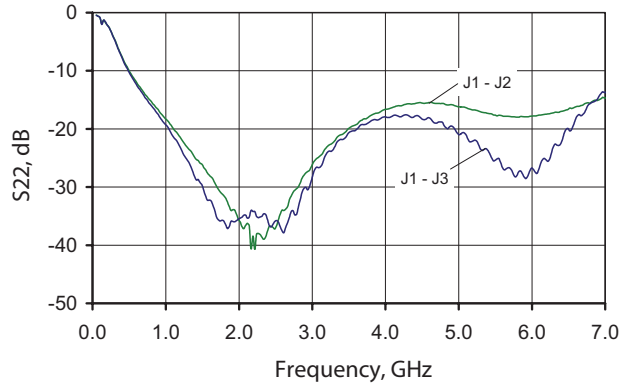
Isolation



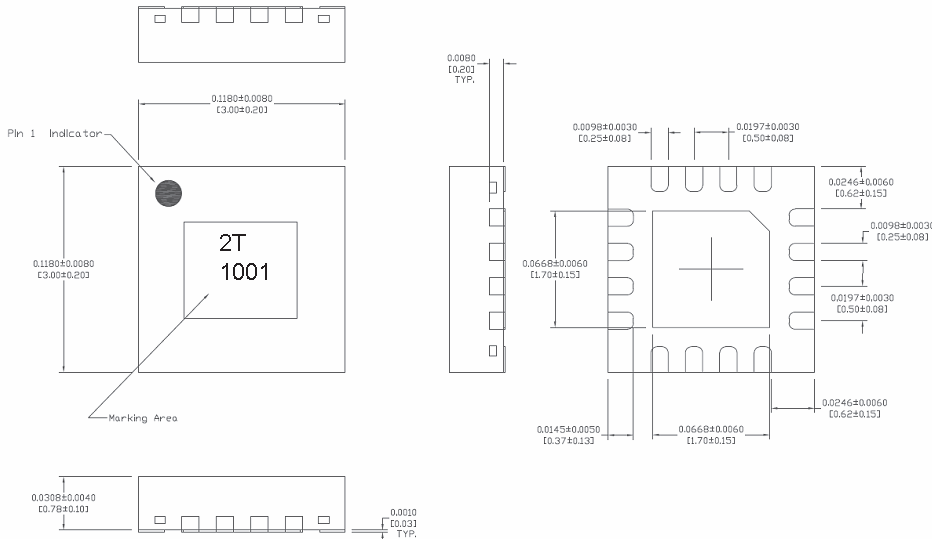
Input Return Loss



Output Return Loss



Package Outline

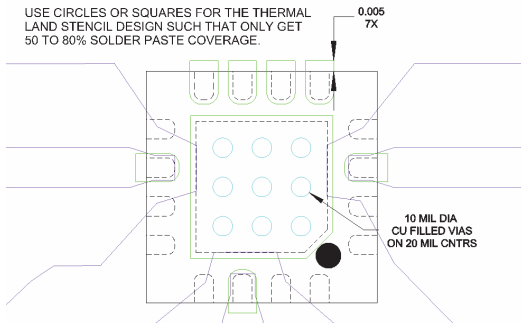


Dimensions: inches [mm] Lead Finish: 300 micro inches matte Tin, annealed 1 hour 150°C

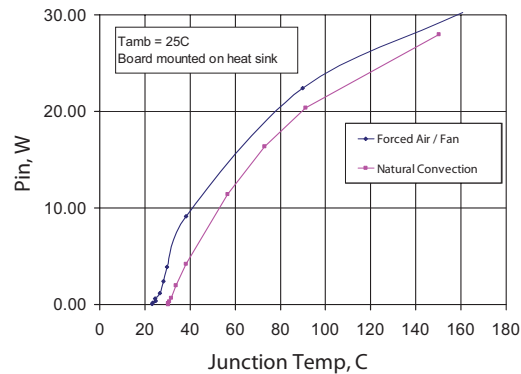
Printed Circuit Board Layout

SOLDER MASK SHOULD PROVIDE A 60µm CLEARANCE BETWEEN COPPER PAD AND SOLDERMASK. ROUNDED PKG PADS SHOULD HAVE MATCHING ROUNDED SOLDER MASK OPENINGS.

USE CIRCLES OR SQUARES FOR THE THERMAL LAND STENCIL DESIGN SUCH THAT ONLY GET 50 TO 80% SOLDER PASTE COVERAGE.



Junction Temperature vs Pin, Frequency 1.3 GHz



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